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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,643	08/27/2003	Ho-Young Lee	030681-556	3899

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BUCHANAN, INGERSOLL & ROONEY PC  
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EXAMINER
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HOLTON, STEVEN E

ART UNIT	PAPER NUMBER
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2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/07/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/648,643

Applicant(s)

LEE ET AL.

Examiner

Steven E. Holton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-17 and 19-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33-36 is/are allowed.
- 6) ☒ Claim(s) 1 and 17 is/are rejected.
- 7) ☒ Claim(s) 3-16 and 19-32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This Office Action is made in response to applicant's amendment filed on 11/9/2006. Claims 1,3-17, and 19-36 are currently pending in the application. An action follows below:

#### ***Response to Arguments***

2. Applicant's arguments filed 11/9/2006 have been fully considered but they are not persuasive.

Regarding independent claims 1 and 17, the Examiner agrees with the arguments presented on page 19 that the analyses of the previous and current frames include consideration of a group of pixels. However, the amendments to claims 1 and 17 do not include the full information provided in the arguments. The amendments to claims 1 and 17 merely include "a block of pixels of predetermined size having the current frame pixel inside the block of pixels". There is no mention of the requirement of a group of pixels in considering the previous frame. Further, the 'block of pixels' could be a block the size of a single pixel only including the current pixel. Therefore, the amendments to claims 1 and 17 do not overcome the previous rejections because Okano considers a block of pixels including the current frame pixel where the block is a single pixel in size.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okano (USPN: 6025818) in view of Kawahara et al. (USPN: 6310588), hereinafter Kawahara.

Regarding claims 1 and 17, Okano discloses a signal processing unit (Fig. 1, element 1) that processes the data to fall within a predetermined range. Further, the drivers (Fig. 1, elements 11 and 13) disclosed by Okano act as subfield converters for converting the subfields into outputs to drive the display device. Also Okano, discloses a false contour elimination unit (Fig. 1, element 7) that changes subfields of the image signal depending on the gray-level transition between each current frame and the previous frame in the image so false contour is minimized (col. 2, line 65 – col. 3, line 5; col. 4, line 64 – col. 5, line 9; Fig. 3 shows a table of current and previous pixels and corrected data applied to change the current pixels), and a display control unit to display the image data (Fig. 1, elements 11 and 13). The system of Okaon compares blocks of pixels where the block of pixels is size 1 and only includes the current pixel. Okano does not expressly disclose “a gamma correction unit, which corrects the digital image signal to suit for the characteristics of a plasma display panel”, an error diffuser circuit

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for diffusing errors between gray levels between pixels within the current frame, or a subfield converter for converting a subfield according to the gray level output.

Kawahara discloses an image display apparatus including a gamma correction unit (Fig. 1, element 2; col. 6, lines 20-25) and a display control unit (Fig. 1, element 8; col. 8, lines 8-35). Kawahara also discloses an error diffuser circuit to diffuse errors in the gray levels of a pixel to adjacent pixels (Fig. 1, element 4; col. 13, line 43 – col. 14, line 9) and a subfield converter to convert final gray signals to usable subfield pulses to display the image (Fig. 2, element 71; col. 6, lines 39-47).

At the time of invention it would have been obvious for one skilled in the art to modify the teachings of Okano with Kawahara to produce an image display device. The motivation for adding the gamma correction unit and display driver of Kawahara would be “for correcting the  $\gamma$  characteristic which is added to the original analog image signals assuming that the signals are displayed on a CRT (Kawahara, col. 6, lines 20-23).” Thus, it would have been obvious to combine the teachings of Okano and Kawahara to produce the device of claims 1 and 17.

#### ***Allowable Subject Matter***

4. Claims 33-36 are allowed.

Claims 3-16, 19, 20, 22, and, 24-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The present invention is directed to a false contour reduction device for use with a electronic display. Independent claim 33 identifies the uniquely distinct features "a false contour elimination unit, which converts subfields by changing a gray level of the corrected digital image signal depending on a degree of gray-level transition between a group of pixels surrounding each current frame pixel and a group of pixels surrounding a corresponding previous frame pixel in the image signal so that false contour is minimized". The closest prior art, Okano discloses comparing a single pixel from a current frame with the corresponding pixel in the previous frame, yet fails to anticipate or render the above underlined limitations obvious.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven E. Holton whose telephone number is (571) 272-7903. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven E. Holton  
Division 2629  
February 2, 2007

AMR A. AWAD  
SUPERVISORY PATENT EXAMINER

